

AMENDMENTS TO THE CLAIMS

1-17. (cancelled)

18. (currently amended) A method for computing a value, the method comprising:

providing input data, a program of computable functions ~~to that describe~~
describes computation of the value to be computed, and one or more uninstantiated
variables;

encoding the program ~~as a computable function~~ in a discrete partial recursive
function;

continualizing the ~~encoded-program~~ discrete partial recursive function to
obtain a first-order, time-dependent differential equation;

expressing the ~~continualized, encoded-program~~ first-order, time-dependent
differential equation as a differential operator;

for N trials,

realizing the differential operator in a physical medium, and

extracting, from the physical medium, ~~a solution for the continualized,
encoded-program~~ signals that correspond to substantiated variables; and

outputting the value ~~for the one or more instantiated variables~~ that corresponds
to an average of the substantiated variables over the N trials.

19. (currently amended) The method of claim 18 wherein the uninstantiated variables
further includes ~~storing the computed value~~ allocating storage for the variables.

20. (previously presented) The method of claim 18 further includes compiling the data
and program of computable functions in terms of an assembly code expressed from a
set of discrete computable functions.

21. (currently amended) The method of claim 20 wherein encoding the program of
computable functions further includes converting the assembly code into the discrete
partial recursive functions.

22. (currently amended) The method of claim 18 wherein continualizing the ~~encoded program~~ discrete partial recursive function further includes:

determining an interpolating function that interpolates the discrete partial recursive function;

parameterizing the interpolating function; and

transforming the parameterized interpolating function into a the first-order, time-dependent, differential equation.

23. (currently amended) The method of claim 18 wherein expressing the ~~continualized, encoded program~~ first-order, time-dependent differential equation as a the differential operator further includes formulating a corresponding quantum canonical Hamiltonian operator.

24. (currently amended) The method of claim 23 wherein formulating the corresponding quantum canonical Hamiltonian operator further includes:

formulating a problem Lagrangian that characterizes the first-order, time-dependent differential operator;

converting the problem Lagrangian into a problem Hamiltonian; and

converting the problem Hamiltonian into the quantum, canonical Hamiltonian.

25. (currently amended) The method of claim 18 wherein ~~instantiating~~ realizing the differential operator in a physical medium further includes converting the differential operator into an excitation field.

26. (currently amended) The method of claim 18 wherein extracting ~~a solution for the continualized, encoded program~~ from the physical medium signals that correspond to the substantiated variables further includes converting emitted radiation into a coherent spectrum of intensities and corresponding frequencies.

27. (previously presented) The method of claim 18 wherein outputting the instantiated variables further includes storing the computed value.

28. (previously presented) A system for computing a value, the system comprising:
- a control and scheduling system;
 - a function input that converts a program of computable functions into an excitation field Hamiltonian;
 - an excitation generator that instantiates the excitation field Hamiltonian into an excitation field;
 - a quantum processor that converts the excitation field into emitted radiation;
 - a transducer that converts the emitted radiation into a spectrum of intensity and corresponding frequency data; and
 - coherent memory that stores and maintains a running average of the spectrum of intensity and corresponding frequency data.
29. (previously presented) The system of claim 28 wherein the control and scheduling system further includes iterated execution of the excitation generator, the quantum processor, and the transducer until the average spectrum of intensities converges to a constant value.
30. (previously presented) The system of claim 28 wherein the excitation field excites polymer fragment molecule nodes in the lattice of the quantum processor.
31. (previously presented) The system of claim 30 wherein the excited polymer fragment molecule nodes emit coherent radiation.
32. (previously presented) A quantum computer processor, the quantum computer processor comprising:
- a lattice of one or more polymer molecule nodes having four orthogonal sides;
 - a first insulating boundary having a first end and a second end located along a first side of the lattice;
 - a second insulating boundary having a first end and a second end located along a second side of the lattice and opposite the first side of the lattice;
 - a first reflective plate fastened to the first ends of the first and second insulating boundaries and located along a third side of the lattice; and

a second reflective plate fastened to the second ends of the first and second insulating boundaries located along a fourth side of the lattice opposite the third side of the lattice.

33. (previously presented) The apparatus of claim 32 wherein the nodes are polymer fragment molecules.

34. (previously presented) The apparatus of claim 32 wherein the one or more nodes are connected by one or more forward and lateral bonds.

35. (currently amended) The apparatus of claim ~~32~~ 34 wherein the forward and lateral bonds are polymer fragment molecules.

36. (previously presented) The apparatus of claim 32 wherein the lattice is a two-dimensional planar arrangement of nodes.

37. (previously presented) The apparatus of claim 32 wherein the lattice is a three-dimensional arrangement of nodes.